

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A particle injector ~~(15, 15', 15'')~~ for introducing particles into a carrier flow of a microfluidic system, ~~in particular for injecting biological cells into the carrier flow of a cell sorter, with comprising:~~
[[-]] at least one inlet ~~(34, 34', 34'')~~ for receiving the carrier flow,
[[-]] at least one outlet ~~(37, 37', 37'')~~ for discharging the carrier flow with the introduced particles,
[[-]] at least one carrier flow channel ~~(42, 42', 42'')~~, connecting the inlet ~~(34, 34', 34'')~~ to the outlet ~~(37, 37', 37'')~~, wherein the carrier flow channel has substantially no dead volume, and
[[-]] at least one injection channel ~~(43, 43', 43'')~~ terminating in the carrier flow channel ~~(42, 42', 42'')~~ for introducing the particles into the carrier flow, wherein the injection channel has a cross-section narrowing to the carrier flow channel.
characterized in that
~~the carrier flow channel (42, 42', 42'') has substantially no dead volume.~~
2. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, ~~characterized in that wherein~~ the injection channel ~~(43, 43', 43'')~~ terminates obtusely in the carrier flow channel ~~(42, 42', 42'')~~.
3. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, ~~characterized in that wherein~~ the injection channel ~~(43, 43', 43'')~~ terminates substantially right-angled in the carrier flow channel ~~(42, 42', 42'')~~.
4. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in ~~any one of the preceding claims, characterized in that~~ Claim 1, wherein the inlet ~~(34, 34', 34'')~~ and the outlet ~~(37, 37', 37'')~~ have a substantially same-size cross-section.

5. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in ~~any one of the preceding claims, characterized in that~~ Claim 1, wherein the inlet ~~(34, 34', 34'')~~ and/or the outlet ~~(37, 37', 37'')~~ has a centering aid ~~(40, 40', 40'', 41, 41', 41'')~~, to arrange a line ~~(36, 39)~~ coaxially to the carrier flow channel ~~(42, 42', 42'')~~ on the inlet ~~(34, 34', 34'')~~ and/or on the outlet ~~(37, 37', 37'')~~.
6. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 5, ~~characterized in that wherein~~ the centering aid ~~(40, 40', 40'', 41, 41', 41'')~~ comprises a substantially hollow-cylindrical take-up, which borders the carrier flow channel ~~(42, 42', 42'')~~ and is arranged coaxially to the carrier flow channel ~~(42, 42', 42'')~~, whereby the inner diameter of the take-up is larger by the wall thickness of the line ~~(36, 39)~~ than the inner diameter of the carrier flow channel ~~(42, 42', 42'')~~.
7. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the injection channel ~~(43, 43', 43'')~~ is arranged on ~~the~~ a top side.
8. (Canceled).
9. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~the injection channel any one of the preceding claims, characterized in that the carrier flow channel~~ ~~(42, 42', 42'')~~ has a cross-section, which widens away from the inlet ~~(34, 34', 34'')~~ towards the outlet ~~(37, 37', 37'')~~.
10. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the inlet ~~(34, 34', 34'')~~ of the carrier flow channel ~~(42, 42', 42'')~~ is located on ~~the~~ an underside and the outlet ~~(37, 37', 37'')~~ of the carrier flow channel ~~(42, 42', 42'')~~ is located on ~~the~~ a top side.
11. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the injection channel ~~(43, 43', 43'')~~ has a feeding-in aid ~~(45)~~ for an injection needle.

12. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 11, ~~characterized in that wherein~~ the feeding-in aid (45) has funnel-shaped cross-section widening (50) of the injection channel.
13. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 11 ~~or 12~~, ~~characterized in that wherein~~ the feeding-in aid (45) comprises a detachably attached separate component, in which a funnel-shaped feed opening (50) is arranged, ~~which terminates said opening terminating~~ in the injection channel ~~(43, 43', 43'')~~ in the a mounted state.
14. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the carrier flow channel ~~(42, 42', 42'')~~ has a substantially shoulder-free inner contour.
15. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the carrier flow channel ~~(42, 42', 42'')~~ has a volume of between 0.02 µl and 1 ml.
16. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the particle injector ~~(15, 15', 15'')~~ can be adapted to be autoclaved.
17. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the particle injector ~~(15, 15', 15'')~~ at least partially comprises a material selected from the group consisting of polyether ether ketone, LEXAN®, ceramic or and metal.
18. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein ~~any one of the preceding claims, characterized in that~~ the particle injector ~~(15, 15', 15'')~~ at least partially comprises a heat-conductive material.

19. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 18, ~~characterized in that wherein~~ the particle injector ~~(15, 15', 15'')~~ is connected with at least one of a temperature sensor ~~(30)~~ and/or ~~with~~ a tempering element ~~(31)~~.
20. (Currently Amended) The particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1, wherein at least one of ~~any one of the preceding claims, characterized in that~~ the inlet ~~(34, 34', 34'')~~ and/or the outlet ~~(37, 37', 37'')~~ has a thread ~~(35, 35', 35'')~~, ~~38, 38', 38'')~~ for attaching a line ~~(36, 39)~~.
21. (Currently Amended) A microfluidic system, ~~in particular cell sorter, with~~ comprising a particle injector ~~(15, 15', 15'')~~ as claimed in Claim 1 ~~any one of the preceding claims~~.
22. (Currently Amended) The microfluidic system as claimed in Claim 21, ~~characterized in that wherein~~ the particle injector ~~(15, 15', 15'')~~ is arranged in a carrier flow line ~~(14)~~ is arranged, whereby the carrier flow line ~~(14)~~ terminates in a cell sorter ~~(1)~~.
23. (Currently Amended) The microfluidic system as claimed in Claim 21 ~~or 22~~, ~~characterized by~~ further comprising a temperature sensor ~~(30)~~ for measuring ~~the~~ a temperature of the particle injector ~~(15, 15', 15'')~~.
24. (Currently Amended) The microfluidic system as claimed in ~~any one of Claims 21 to 23~~, ~~characterized by~~ Claim 23, further comprising a tempering element ~~(31)~~ for heating and/or cooling the particle injector ~~(15, 15', 15'')~~.
25. (Currently Amended) The microfluidic system as claimed in Claim ~~23 and 23~~, ~~characterized by~~ 24, further comprising a temperature controller ~~(32)~~, which is connected on ~~the~~ an input side to the temperature sensor ~~(30)~~ and on ~~the~~ an output side to the tempering element ~~(31)~~.
26. (Currently Amended) The microfluidic system as claimed in ~~any one of Claims 22 to 25~~, ~~characterized in that~~ Claim 22, wherein several particle injectors ~~(15.1-15.3)~~ are arranged successively in the carrier flow line ~~(14)~~.

27. (New) The microfluidic system as claimed in Claim 21, wherein the microfluidic system is a cell sorter.
28. (New) The particle injector as claimed in Claim 1, wherein the outlet has a centering aid to arrange a line coaxially to the carrier flow channel on the outlet.
29. (New) The particle injector as claimed in Claim 1, wherein the particle injector is adapted to inject biological cells into the carrier flow of a cell sorter: